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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/789,297	02/27/2004	Keith R. Baldwin	060707-1050	7627
24504 7590 04/03/2007 THOMAS, KAYDEN, HORSTEMEYER & RISLEY, LLP 100 GALLERIA PARKWAY, NW STE 1750 ATLANTA, GA 30339-5948			EXAMINER NGUYEN, LEON VIET Q	
			ART UNIT 2611	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/789,297	<b>Applicant(s)</b> BALDWIN ET AL.	
	<b>Examiner</b> Leon-Viet Q. Nguyen	<b>Art Unit</b> 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 October 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 13-14, and 16-18 is/are rejected.
- 7) ☒ Claim(s) 5-12, 15, 19 and 20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 2/27/2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Specification*

1. The disclosure is objected to because of the following informalities:

- a. In ¶0010, "(S-C" should read "(S-C)".

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claim 1, 13, and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Limberg et al (US6621527) in view of Ibrahim et al (20040052306).**

Re claim 1, Limberg teaches a receiver including an analog Barker detector, comprising:

digital processing logic (tuner 5 in fig. 1, col. 5 lines 40-42) having a receive signal input (antenna 6 in fig. 1, col. 5 lines 44-45) for processing digital baseband signals and having a power activation input (ADC 23 in fig. 1. As stated in applicant's specification, and ADC may include a power activation input) for receiving a detection signal;

a radio that receives and converts radio frequency (RF) signals into analog baseband signals, said radio comprising:

a matched filter coupled to receive said analog baseband signals (match filter 27 in fig. 1, col. 7 lines 24-25);

an envelope detector, coupled to said Barker matched filter (ADC 23 in fig. 1, col. 7 line 24);

a peak detector (threshold detector 28, peak detector 29, and subtractor 30 in fig. 1), coupled to said envelope detector (peak detector 29 coupled to ADC 23 in fig. 1, col. 7 lines 29-31); and

a counter circuit (counter 37 in fig. 1, col. 9 lines 67-col. 10 line 5), coupled to said peak detector (counter 37 coupled to peak detector 29 in fig. 1), that detects signals and that provides said detection signal; and

an analog-to-digital converter (ADC) that converts said analog baseband signals into said digital baseband signals (ADC 23 in fig. 1).

However Limberg fails to teach using a Barker matched filter. Ibrahim teaches utilizing a Barker matched filter, which is able to perform signal detection (§0050).

Therefore taking the combined teachings of Limberg and Ibrahim as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the Barker matched filter of Ibrahim into the receiver of Limberg. The motivation to combine Ibrahim and Limberg would be to accurately determine a despread baseband symbol even though errors exist (§0010) and reduce time and frequency errors to within acceptable limits (§0050).

Re claim 13, the modified invention of Limberg teaches a receiver wherein said peak detector comprises:

a low pass filter that averages envelope output samples and that provides a threshold signal (threshold detector 28 in fig. 1 in Limberg, col. 7 lines 29-30 in Limberg); and

a comparator that compares said threshold signal with said envelope output samples (subtractor 30 in fig. 1 in Limberg, col. 7 lines 32-35 in Limberg).

Re claim 16, the modified invention of Limberg teaches a receiver further comprising a multiple tap moving average FIR filter coupled between said envelope detector and said peak detector (IIR LPF 32 coupled between ADC 23 and peak detector 28, 29, and 30 in fig.1). One of ordinary skill in the art would have found it obvious to use FIR filter 24B in fig. 4 in place of IIR filter 32 in fig. 1 for the benefit of providing stability and to ensure rounding errors are not compounded by summed iterations. It is well known in the art that FIR filters are inherently stable and require no feedback.

Re claim 17, the modified invention of Limberg teaches a wherein said counter circuit comprises two counters (counters 34 and 37 in fig. 1 of Limberg) that are each reset periodically in a staggered fashion (col. 9 lines 31-35 and lines 51-55 in Limberg)

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for overlapping windows and an OR circuit coupled to outputs of said two counters (OR gate 39 coupled to the output of counters 34 and 37 in fig. 1 of Limberg).

**3. Claim 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Limberg et al (US6621527) and Ibrahim et al (20040052306) in view of Salkhi (US20030128157).**

Re claim 2, the modified invention of Limberg fails to teach a receiver wherein said digital processing logic is powered down between signal acquisitions and powers up in response to said detection signal. However Salkhi teaches a receiver wherein said digital processing logic is powered down between signal acquisitions (§0013. The selected components is interpreted to be the digital processing logic which is powered down during periods when a user is not querying for location information) and powers up in response to said detection signal (§0013. The user querying the GPS receiver unit is interpreted to be the detection signal, which reactivates the powered down units).

Therefore taking the modified teachings of Limberg and Ibrahim with the teachings of Salkhi as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the powering down of components of Salkhi into the receiver of Limberg and Ibrahim. The motivation to combine Ibrahim, Limberg and Salkhi would be to save a substantial amount of the limited power source available (§0013).

Re claim 3, the modified invention of Limberg fails to teach a receiver of wherein said ADC includes a power activation input receiving said detection signal and is powered down between signal acquisitions and powers up in response to said detection signal. However Salkhi teaches a receiver wherein said digital processing logic is powered down between signal acquisitions (¶0013. It is well known that there are analog-to-digital converters within a GPS unit. The selected components is interpreted include a ADC, which is powered down during periods when a user is not querying for location information) and powers up in response to said detection signal (¶0013. The user querying the GPS receiver unit is interpreted to be the detection signal, which reactivates the powered down units).

Therefore taking the modified teachings of Limberg and Ibrahim with the teachings of Salkhi as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the powering down of components of Salkhi into the receiver of Limberg and Ibrahim. The motivation to combine Ibrahim, Limberg and Salkhi would be to save a substantial amount of the limited power source available (¶0013).

**4. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Limberg et al (US6621527) and Ibrahim et al (20040052306) in view of Aliahmad et al (US6794920).**

Re claim 4, the modified invention of Limberg teaches a receiver wherein said

radio performs direct conversion (col. 10 lines 26-31 in Limberg, it is well known in the art that synchrodyne receivers are direct conversion receivers) but fails to teach wherein the receiver further includes first order DC correction loops using up/down counters as feedback integrators. However Aliahmad teaches a correction loop which includes an up/down counter (col. 3 lines 61-63).

Therefore taking the modified teachings of Limberg and Ibrahim with the teachings of Aliahmad as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the correction loop of Aliahmad into the receiver of Limberg and Ibrahim. The motivation to combine Ibrahim, Limberg and Aliahmad would be to correct all receive signal path offset errors (col. 3 line 67 - col. 4 line 2).

**5. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Limberg et al (US6621527) and Ibrahim et al (20040052306) in view of Kellogg (US4739189).**

Re claim 14, the modified invention of Limberg fails to teach a receiver wherein said LPF incorporates selectable bandwidth and is initially set in a high bandwidth mode during initial acquisition and re-acquisition of noise floor, and is switched to a low bandwidth mode for tracking and signal detection. However Kellogg teaches a filter that has a selectable bandwidth (col. 2 lines 1-5, the bandwidth is increased therefore making it selectable). The bandwidth is initially set for high



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bandwidth (col. 2 lines 7-9, high frequency input signals are interpreted to be high bandwidth) and then switched to low bandwidth (col. 2 lines 9-15).

Therefore taking the modified teachings of Limberg and Ibrahim with the teachings of Kellogg as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the low pass filter of Kellogg into the receiver of Limberg and Ibrahim. The motivation to combine Ibrahim, Limberg and Kellogg would be to provide an improved low-pass filter circuit having a high slew rate (col. 2 lines 16-18) and having selectively either low-pass or all-pass characteristics (col. 2 lines 19-21).

**6. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Limberg et al (US6621527) and Ibrahim et al (20040052306) in view of Nishikawa (US4583211).**

Re claim 18, the modified invention of Limberg fails to teach a receiver wherein said counter circuit comprises:

a plurality of overlapped window counters coupled in parallel and having a plurality of outputs; and

decision logic coupled to said plurality of outputs of said plurality of overlapped window counters.

However Nishikawa teaches a counter circuit (fig. 7), wherein the counter circuit comprises a plurality of counters coupled in parallel with each counter having an output (counters 174-1 to 174-N in fig. 7, window counters are merely a type of counter which

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are well known in the art). Nishikawa also teaches a comparator coupled to the outputs of the counters (comparator 112 coupled to counters 174-1 to 174-N in fig. 7, the comparator is interpreted to be the decision logic).

Therefore taking the modified teachings of Limberg and Ibrahim with the teachings of Nishikawa as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the parallel counters of Nishikawa into the receiver of Limberg and Ibrahim. The motivation to combine Ibrahim, Limberg and Nishikawa would be to considerably improve detection resolution in the frequency detection (col. 8 lines 60-64).

### ***Allowable Subject Matter***

7. Claims 5-12, 15, and 19-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The allowable subject matter in claim 5 pertains to the track and hold stage and the Barker correlator coupled to the track and hold stage and the envelope detector.

### ***Conclusion***

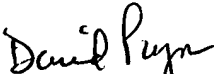
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leon-Viet Q. Nguyen whose telephone number is 571-270-1185. The examiner can normally be reached on monday-friday, alternate friday off, 7:30AM-5PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Payne can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Leon-Viet Nguyen/

  
DAVID C. PAYNE  
SUPERVISORY PATENT EXAMINER